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Pierre Fish, Cornell University; Miss Catharine Foot, Evanston, Ill.; Mrs. S. P. Gage, Cornell University; Professor S. H. Gage, Cornell University; Professor C. W. Hargitt, Syracuse University; Dr. B. F. Kingsbury, Cornell University; Professor E. W. McBride, McGill University; Dr. P. C. Mensch, Ursinus College; and Professor A. D. Morrill, Hamilton College.

The following papers were presented and discussed:

*On Reading the Records of Evolution in the Wings of Insects.* J. H. COMSTOCK.

THIS was an illustration of a method of taxonomic work outlined by the writer several years ago in an essay entitled 'Evolution and Taxonomy,' where he urged a more constant use of the theory of evolution than is customary in work of this kind. It was suggested that, as the structure of a highly organized animal or plant is too complicated to be understood in detail at once, the student begin with the study of a single organ possessed by the members of the group to be classified, and determine its primitive form and the various ways in which this has been modified. The data thus obtained will aid in making a *provisional* classification of the group, which should be confirmed or corrected by a similar study of other organs.

The illustration given in this paper was an effort to obtain data bearing on the working-out of the phylogeny of the orders of winged insects, by a study of the characters presented by the venation of the wings, the homologies of the *anlagen* of the winged-veins, *i. e.*, the tracheæ that precede them in nymphs or pupæ, were determined, and a hypothetical type representing the arrangement of the tracheæ in the nymph of the stem form of winged insects was figured. It was then shown how this type has been modified in the different lines of descent; in some by a reduction

in the number of wing-veins by a coalescence of adjacent veins; in others by the development secondarily of supernumary veins. Each of these processes can be observed by a study of the ontogeny of certain species representing the line of development in which it occurs, and also by a study of allied forms in which it has taken place in varying degrees.

*The Records of Evolution in the Wings of Dragon-Flies.* J. G. NEEDHAM.

THIS paper furnished a concrete illustration of the method outlined in the preceding one. The adult dragon-fly wing was compared with the typical insect wing and was seen to differ widely from it, but the arrangement of the tracheæ in the budding wing of a young nymph was shown to be nearly that of the type. The development of the complex adult venation was then traced in the development of the tracheæ of the nymph, and it was seen that these tracheæ show what was the primitive condition of every feature of the venation.

The *triangle* was selected for an illustration of the reading of the dragon-fly record, and it was shown that primitively this differed little from an ordinary rectangular oreole, while with the adaptation of it to the bracing of the basal part of the wing every part of it has been modified along certain definite lines, which can be clearly traced. Some of these lines of development were illustrated by series of figures. It is stated that the *triangle* is but one of many correlated wing characters, that specialization has taken place along many different lines, and that almost every wing has preserved in some of its parts a bit of the ancestral record. In conclusion, attention was called to the greater value of conclusions based on a true genealogic study of a single organ than of those based on the mere assortment of characters at large.